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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,262	11/17/2003	Michael A. Vaudrey	10551/529	1736
23838	7590	09/23/2004	EXAMINER	
KENYON & KENYON 1500 K STREET, N.W., SUITE 700 WASHINGTON, DC 20005			GRAHAM, ANDREW R	
			ART UNIT	PAPER NUMBER
			2644	

DATE MAILED: 09/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/713,262

Applicant(s)

VAUDREY ET AL.

Examiner

Andrew Graham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____

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DETAILED ACTION***Information Disclosure Statement***

1. The information disclosure statement filed March 17, 2004 fails to comply with the provisions of 37 CFR 1.98 and MPEP § 609 because copies of the five documents cited on the fifth page of the IDS have not been submitted. The parent cases (09/580203, 10/178553) in which these references were first listed were consulted, but copies of these references were not found. The hyperlinks included in the five listings are invalid. Accordingly, the submission does not comply with 37 CFR 1.98(d)(2) because the parent case does not contain copies of the references, per 37 CFR 1.98(a)(2)(ii). It has been placed in the application file, but the information referred to therein has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609 ¶ C(1).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. **Claims 1-8** are rejected under 35 U.S.C. 102(e) as being anticipated by Klayman et al (USPN 5912976). Hereafter, "Klayman et al" will be referred to as "Klayman '976".

Klayman '976 teaches an audio enhancement system for outputting a multi-channel input through a two channel output arrangement. Figure 8 illustrates a preferred embodiment for processing and mixing multi-channel audio signals to achieve a surround sound experience from a pair of output signals. The provided input signals are the left and right channels (M_L, M_R), the center channel (C_{IN}), the left and right surround channels (S_L, S_R), and a bass channel signal (B) (col. 9, lines 3-8). Each input signal, excluding the bass channel, is applied through a pair of gain stages, each stage being parallel among the input channels. The right main channel is applied to gain stages (252, 290), the left main channel is applied to gain stages (254, 292), the center channel (C_{IN}) is applied to gain stages (256, 258), the left surround channel is applied to gain stages (260, 330), and the right surround channel is applied to gain stages (262, 334) (col. 9, lines 8-16 and 34-37, and col. 10, lines 1-7). The bass channel also includes a gain stage (336) (col. 10, lines 3-5). Both of these sets of gains (252, 254, 256, 260, 262, 336 or 290, 292, 258, 330, 334, 336) or

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subsets thereof read on "at least N parallel gain stages, each gain stage having an input and an output, wherein each gain stage is individually driven at its input by only one of X related spatial channels". The outputs of these channels read on "produces at its output an amplitude adjusted version of the only one of X related spatial channels". The cited sets and possible subsets thereof read on "N and X are integers, N is greater than 4, and X is one of equal to and not equal to N". The outputs of these gain stages are applied directly or through other circuitry to left and right mixers (280,284) which output two channel signals (col. 9, lines 17-67 and col. 10, lines 1-7). The components involved in this signal processing, including but not limited to the mixers (280,284), read on "a circuit that downmixes the outputs of the N parallel gain stages to M channels, wherein M is an integer greater than 0 and less than N".

Regarding **Claim 2**, Figure 4 illustrates a processing enhancement module (100) that is part of an overall immersion processor (24), wherein the processing of the module is disclosed as user-adjustable to achieve a desired effect and or desired position or a reproduced sound (col. 6, lines 53-61). The processing includes the implementation of gain (148) based on the setting of multipliers. This processing parallels that shown for the pairs of signals in Figure 8, where the applied gains are disclosed as based on a user's preferences (col. 12, lines 32-41). The first stage of gains also receives volume adjustment signals (col. 9, lines 8-16). These

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teachings collectively read on "the N parallel gain stages are user-adjusted".

Regarding **Claim 3**, the volume adjustment signal (C_{VOLUME}) only affects the center channel signal (col. 9, lines 9-14). This reads on "the gain of one of the N parallel gain stages is adjusted independently of the gain of the remaining N-1 parallel gain stages". Klayman '976 also notes a technique of mixing all of the multiple channel signals into two channels with adjusted relative gains.

Regarding **Claim 4**, the provided input signals shown in Figure 8 include left and right channels (M_L, M_R), a center channel (C_{IN}), and left and right surround channels (S_L, S_R) (col. 9, lines 3-8). This reads on "the X related spatial channels are a left, right, center, right surround, and left surround channels of an audio program".

Regarding **Claim 5**, the provided input signals shown in Figure 8 include a low frequency effects signal B (col. 9, lines 3-8). This reads on "the X related spatial channels further include a low frequency effects channel of the audio program".

Regarding **Claim 6**, please refer above to the components and functions cited in regards to the rejection of Claims 1. Claim 6 is rejected in view of the same components and corresponding functions.

Regarding **Claim 7**, Klayman '976 teaches that the processing performed by the modules (100), which includes the setting of gain coefficients (148), may be user-adjustable (col. 6, lines 51-61). Klayman '976 also teaches that the gains applied a set of amplifiers is based on a user's preferences, and adjustment gain control signals

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are also applied to amplifiers (col. 9, lines 8-17 and col. 12, lines 32-41). Collectively, these teachings read on "adjusting is controlled by an end-user". Klayman '976 also teaches that one mixing method may be to combine all of the signals into a two channel format while only modifying the relative gains between mixed signals (col. 2, lines 15-19).

Regarding **Claim 8**, the applicant has defined a "primary audio channel" as a "voice or dialog signal" and a "remaining audio channel" as all other channels that are not a voice or dialog signal. Klayman '976 specifically refers to the center channel as containing dialogue, which reads on "one of the X related spatial channels is a primary audio channel" (col. 4, lines 48-55). The other channels, such as the surround channels (S_L, S_R) read on "at least one of the other of the X related spatial channels is a remaining audio channel".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. **Claim 9** is rejected under 35 U.S.C. 103(a) as being unpatentable over Klayman '976 as applied to claims 1-8 above, and

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further in view of Klayman (USPN 4748669). Hereafter, "Klayman" will be referred to as "Klayman '669".

As detailed above, Klayman '976 teaches a system for incorporating surround, multi-channel signal effects into a two output channel system. Klayman '976 discloses the technique of combining signals into a two channel format while only adjusting the relative gain ratios between the signals (col. 2, lines 15-19 and col. 12, lines 56-60).

Klayman '976 does not clearly specify:

- comparing the primary audio channel with at least the remaining audio channel to determine a ratio of the primary audio channel to the at least remaining audio channel
- automatically adjusting one of the audio primary channel and the remaining audio channel when a predetermined value for the ratio is not met

Klayman '669 discloses a stereo enhancement system for processing various versions of an input signal into an enhanced stereo output signal. One of the signals produced in the system is a sum signal (L+R), which Klayman associates with a "center stage" location, wherein the presence of a strong signal strength may indicate a center stage vocalist or instrumentalist in the reproduced audio (col. 13, lines 57-61 and col. 14, lines 28-32). In view of this description, this signal fits the applicant's definition of a "preferred signal", as is cited above. The other signals managed in the system are

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difference signals (L-R,R-L), which are known to influence the width or directivity of the stereo image (col. 2, lines 15-17). These signals are considered herein to meet the applicant's definition of "remaining audio" channels. In producing a two channel output, Klayman '669 employs a control circuit (30) for adjusting the stereophonic characteristic of the reproduced audio (col. 7, lines 49-57). This circuit (30) controls the gain of a gain amplifier (22), which outputs the difference signal (L-R), to maintain a constant ratio between the sum and difference signals and control the effects of reverberation (col. 12, lines 18-30). This control from the circuit (30) is based directly on the input of the sum and difference signals (col. 14, lines 44-48 and 61-64). The ratio between the sum and difference indicates the possible presence of reverberation (col. 12, lines 30-37). The assessment of this ratio reads on "comparing the primary audio channel with at least the remaining audio channel to determine a ratio of the primary audio channel to at least the remaining audio channel". This predetermined ratio is established by a potentiometer (39) (col. 16, lines 41-47). This predetermined ratio affects the CTRL signal output from the control circuit (30), which is applied to a gain controlled amplifier (22), which again, affects the gain applied to the difference signal (col. 16, lines 26-40). This application of a gain control signal, based on the ongoing input of the sum and difference signals reads on "automatically adjusting one of the primary audio channel and the remaining audio channel when a predetermined value for the ratio is not met".

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To one of ordinary skill in the art at the time the invention was made, it would have been obvious to incorporate the gain adjustment circuit of Klayman '669 into the multi-channel processing circuitry of Klayman '976, wherein the sum signal of Klayman '669 is equated to the center channel of Klayman '976, and the difference signal of Klayman '669 is equated to at least the left and right channels of Klayman '976. Klayman '976 discusses the ratio of signals in the output signals; Klayman '669 discloses the control of this ratio, with the provided benefit being the control of the image of the reproduced audio. Alternatively stated, the processing circuitry of Klayman '669 would have provided a controlled balance between the center stage image and the signals which have the effect of widening the sound image.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Suzuki (USPN 5054077) discloses a mixer that is able to automatically maintain the amplitude ratios between mixed channel signals.

Liu et al (USPN 6349285) discloses the use of individually adjustable gains for channels downmixed to form a signal applied to a subwoofer.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Graham

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whose telephone number is 703-308-6729. The examiner can normally be reached on Monday-Friday, 8:30 AM to 5:00 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Isen can be reached on (703)305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AG
Andrew Graham
Examiner
A.U. 2644

ag
September 20, 2004

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XU MEI
PRIMARY EXAMINER